Department of Environmental Conservation
Response to Comments

For

Alaska Pollutant Discharge Elimination System (APDES)

Individual Permit AK0055867 – Donlin Gold LLC
Donlin Gold Project

Public Noticed December 15, 2017 – February 13, 2018

FINAL, May 24, 2018

Alaska Department of Environmental Conservation
Wastewater Discharge Authorization Program
555 Cordova Street
Anchorage, AK 99501

Contents

1 Introduction

1.1 Summary of Facility / Permit

Donlin Gold, LLC (Donlin Gold) is proposing the development of an open pit, hard rock gold mine in southwestern Alaska, about 277 miles west of Anchorage, 145 miles northeast of Bethel, and 10 miles north of the village of Crooked Creek.

Alaska Department of Environmental Conservation (Department or DEC) is issuing Alaska Pollutant Discharge Elimination System (APDES) Individual Permit AK0055867 – Donlin Gold Project (Permit), which authorizes the discharge of treated wastewater to Crooked Creek from Outfall 001. The proposed facility is expected to operate at a net positive water balance thus necessitating the need to discharge excess water. The water treatment plant (WTP) will utilize oxidation, clarification and greensand filtration, with reverse osmosis (RO) polishing as required. No mixing zone is authorized by the permit.

1.2 Opportunities for Public Participation

The Department of Environmental Conservation (DEC or Department) proposes to issue the Permit after considering all substantive public comments. To ensure public, agency, and tribal notification and opportunities for participation, the Department:

- Identified the permit on the annual Permit Issuance Plan posted online at: http://www.dec.state.ak.us/water/wwdp/index.htm;
- Notified potentially affected tribes and local governments that the Department would be working on this permit via letter, fax and/or email;
- Posted a preliminary draft of the permit on-line for a 10-day applicant review November 9, 2017 through November 22, 2017 and notified tribes, local governments and other agencies;
- Posted the public notice on the Department's public notice web page and published newspaper advertisements in the Anchorage Dispatch News and Fairbanks Daily News Miner on December 15, 2017 for a 60-day public review on the Draft Permit and Fact Sheet ending on February 13, 2018;
- Held public meetings and hearings at the following locations and dates:

City	Date	Meeting Location
Aniak	January 17, 2018	Aniak Community Center
Bethel	January 23, 2018	Yupiit Piciryarait Cultural Center
Anchorage	January 26, 2018	Atwood Conference Center

- Posted the Proposed Final Permit, Fact Sheet, and Response to Comments (RTC) document on-line for a five-day applicant review May 15, 2018 through May 21, 2018; and,
- Sent email notifications via the APDES Program List Serve when the Preliminary Draft, Draft, and Proposed Final Permits were available for review.

The Department also requested comments from the Departments of Natural Resources (DNR), Fish and Game (ADF&G), the National Marine Fisheries Services, the U.S. Fish and Wildlife Service, and the

Environmental Protection Agency (EPA). Of these agencies, only EPA provided comments on the draft permit.

During the public comment period, the Department received numerous comments and testimonies on the Draft Permit and Fact Sheet. Substantive comments and corresponding responses are provided in Section 2.0 through 4.0. The applicant also submitted comments during the five-day applicant review period; those comments were mainly typographical or to serve to clarify existing language with a few more substantive comments that were in line with comments they submitted during the public notice period. This document summarizes the comments submitted and the justification for any action taken or not taken by DEC in response to the comments.

1.3 Final Permit

The Final Permit was adopted by the Department on May 24, 2018 with an effective date of July 1, 2018.

There were changes made to the Draft Permit and Fact Sheet resulting from comments received during the public notice of the Draft Permit and Fact Sheet that are reflected in the Final Permit and Fact Sheet. Where comments resulted in changes to the permit or fact sheet, associated changes are included in the response to those comments. There were also some minor changes from the Draft Permit and Fact Sheet after public notice to correct typographical and grammatical errors, formatting, and to clarify information which are not detailed in this document.

2 Comments by Environmental Protection Agency

EPA submitted comments on the Draft Fact Sheet and Permit by email and letter dated February 7, 2018. Minor editorial changes suggested by EPA were generally accepted without further detail provided in this document. Each substantial EPA comment is summarized and responded to by DEC below.

2.1 Permit – Schedule of Submission

EPA Comment: The Permit Schedule of Submission describes the frequency of reporting of pH excursions as monthly; however, the due date as annually. EPA expects that all deviations outside the stated permit limits be reported monthly with the Discharge Monitoring Report (DMR) to both document and allow DEC to verify compliance with the limits, including any duration the pH reading exceed the pH limits relative to the excursion allowance.

DEC Response: The schedule for pH excursion reporting has been removed from the Schedule of Submission to resolve the monthly versus annually reporting conflict. Reporting of pH excursions is required to be submitted with the monthly DMR.

2.2 Permit, Section 1.2.9 - Reduction in Monitoring Frequency

EPA Comment: The permit appears to allow the permittee to request and DEC to "grant" reduced monitoring without a modification of the permit. The permit should clarify and DEC must implement reductions of the monitoring frequencies in the permit by major modification of the permit to ensure appropriate public notice and opportunity for comment.

DEC Response: Permit Section 1.2.9 has been deleted.

2.3 Permit, Page 7, Table 3

EPA Comment:

- Under the effluent limit for flow, the permit indicates 'not applicable'. At a minimum, the average monthly and daily maximum flow should be reported on the monthly DMR.
- The secondary treatment standards in 18 AAC 72.990(59)(E) contain pH range of 6.0 to 9.0 standard units and therefore must be included as an effluent limit.

DEC Response:

- The average monthly and daily maximum flow have been added to Table 3 to require reporting of these parameters in the monthly DMR.
- pH was added to Table 3, in compliance with the secondary treatment standards in 18 AAC 72.990(59)(E).

2.4 Fact Sheet, Page 13, Table 3

EPA Comment: The limit for flow, the permit indicates 'not applicable'. At a minimum, the average monthly and daily maximum flow should be reported on the monthly DMR.

DEC Response: The average monthly and daily maximum flow have been added to Table 3 to require reporting of these parameters in the monthly DMR.

2.5 Fact Sheet, Ammonia Criteria

EPA Comment: The fact sheet should better explain how criteria (based on temperature, pH) was derived and provide the source of inputs. DEC must ensure that the permit requires monitoring of parameters needed to develop all criteria in subsequent permit cycles.

DEC Response: The pH and temperature data of the receiving water was provided by the permit applicant and was used to calculate the applicable ammonia criteria in accordance with the Alaska Water Quality Standards, 18 AAC 70 and the *Alaska Water Quality Criteria Manual for Toxic and other Delterious Organic and Inorganic Substances*, amended December 12, 2008. The permit used a pH of 7.9 standard units and a temperature of 6.4ºC, the 85th percentiles of the receiving water data, were used to calculate the acute aquatic life criterion of 6.9 mg/L and chronic aquatic life criterion of 2.8 mg/L for ammonia. The pH and temperature values used to calculate the ammonia criteria have been added to Fact Sheet Table B-2 for clarification. Further, pH and temperature are permit monitoring requirements for both treated effluent and receiving water for which the collected data will be used to recalculate the ammonia criteria and permit limits in the future permit cycle.

2.6 Fact Sheet, Ammonia Criteria, Appendix B, B-II

EPA Comment: The discussion of effluent limits, Appendix B, B-II, should provide justification for the allowance in Permit Section 1.2.4 regarding pH excursions [for reference it is 40 CFR 401.17 as adopted by reference in 18 AAC 83.010(g)].

DEC Response: Justification for pH effluent limitations for continuous pH monitoring was added to Fact Sheet Appendix B, B-II as, "In 40 CFR Part 401.17, EPA established pH effluent limitations under continuous pH monitoring which was adopted by reference in 18 AAC 83.010(g) and exercised in Permit Section 1.2.4."

3 Comments by Donlin Gold

Donlin Gold submitted comments on the Draft Fact Sheet and Permit by email and letter dated February 13, 2018. Minor editorial changes suggested by Donlin Gold were generally accepted without further detail provided in this document. Each substantial Donlin Gold comment is summarized and responded to by DEC below.

3.1 Permit – Schedule of Submission

Donlin Gold Comment: Request that there be a statement under the Annual Water Quality Report, or in Permit Section 1.6 as appropriate, that the requirements for sampling of the receiving water and reporting of results do not apply until the first discharge regulated under the individual permit occurs.

DEC Response: The permit has been clarified to reflect that receiving water monitoring and reporting shall begin after the commencement of the initial discharge from Outfall 001.

Donlin Gold Comment: In the Schedule of Submissions table, reporting of Best Management Practices (BMP) incidents for Permit Section 2.2.4.6 is required within 24 hours of discovery. The reporting of BMP incidents is not an event that must be reported within 24 hours under Section 3.4.3 of the Standard Terms and Conditions applicable to all APDES Permits. If there is a BMP incident, it may take more than 24 hours to determine the circumstances leading to the incident, the corrective actions taken, and recommended changes to prevent a recurrence. Donlin Gold requests that the Department revise the time period for reporting BMP incidents to five days consistent with the provisions of Section 3.4.1.2 of the Standard Terms and Conditions relating to written reports. As discussed below in the Specific Comments to the Draft Permit, Donlin Gold requests that Permit Part 2.2.4.6 clarify that the reports are to be submitted to DEC within five days of the BMP Incident.

DEC Response: Inclusion of the reporting of BMP incidents within 24-hours of discovery was in error. The reference to BMP incident reporting was removed from the Table of Submission.

3.2 Permit – Section 1.2.9

Donlin Gold Comment: Donlin Gold requests that the provision also allow for a request to eliminate parameters from the required sampling. As noted in the Draft Fact Sheet, the high number of parameters is due to the conservative determination of the maximum expected effluent concentration. For a number of parameters, actual measured concentrations may be significantly less warranting not just a reduction in the sampling frequency but eliminating the parameter. Donlin Gold requests that Permit Section 1.2.9 be revised to read as follows:

Upon written request by the permittee, a reduction of the monitoring frequency for parameters with weekly monitoring or a request to eliminate monitoring of a parameter may be requested by the permittee and granted by the Department in writing upon the result of no exceedances of the permit limit included in Table 2 after 52 consecutive weeks of effluent data collection and submission.

DEC Response: In the response to Comment 2.2, Permit Section 1.2.9 was deleted. No changes were made to the permit or fact sheet as a result of this comment.

3.3 Permit – Section 1.2

Donlin Gold Comment: Donlin Gold requests the addition of the following paragraphs under Section 1.2. These would allow the establishment, if necessary, of a site-specific method detection limit/method limit (MDL/ML) for WAD cyanide in the APDES Permit:

- 1.2.10 During the life of this permit, a new or revised site specific MDL for WAD cyanide unique to a site specific water chemistry may be established in accordance with 18 AAC 70.020(c)(7) and EPA guidance document no. EPA-821-B-04-005. Upon the effective date of the Department-approved MDL, this permit is considered to be automatically modified to require reporting of measurements below, at or above the Department-approved site specific MDL in accordance with Permit Section 1.2.7.
- 1.2.11 During the life of this permit, a new or revised site specific ML for WAD cyanide unique to a site specific water chemistry may be established in accordance with 18 AAC 70.020(c)(7) and EPA guidance document no. EPA-821-B-04-005. Upon the effective date of the department-approved ML, this permit is considered to be automatically modified to require reporting of measurements below, at or above the Department-approved site specific ML in accordance with Permit Section 1.2.7.

DEC Response: Paragraphs 1.2.10 and 1.2.11 were added to Permit Section 1.2.

3.4 Permit – Section 1.5.1

Donlin Gold Comment: Donlin Gold requests that a statement be included in Permit Section 1.5.1 that indicates that sampling is not required until discharge begins.

DEC Response: The permit has been clarified to reflect that effluent monitoring and reporting shall begin after the commencement of the initial discharge from Outfall 001.

3.5 Permit – Section 1.6.1

Donlin Gold Comment: Donlin Gold requests the APDES Annual Report be combined with the Integrated Waste Management Permit (WMP) annual monitoring report.

DEC Response: The APDES Annual Report and the WMP annual reporting requirements are separate stand-alone submittals satisfying different statutes and regulations and include different data summary requirements. Combining the required information for both submittals into a single document would make it more difficult to ascertain compliance with the different permit requirements. Further, APDES submittals require uploading to EPA permit compliance databases whereas WMP submittals are not uploaded to EPA databases as they are state only requirements. No changes were made to the permit or fact sheet as a result of this comment.

3.6 Permit – Figure 2

Donlin Gold Comment: Donlin Gold has provided an updated version of Figure 2 in which the diversion trenches on the south side of the Tailings Storage Facility are included.

DEC Response: DEC has replaced Figure 2 with the figure provided by Donlin Gold.

3.7 Permit – Appendix A, A-12

Donlin Gold Comment: Donlin Gold requested a correction to Appendix A, A-12 to read, "A defendant that is an organization may be sentenced to pay a fine not exceeding the greater of: (1) ~~$200,00~~ **$200,000**; (2) three times the pecuniary gain realized by the defendant as a result of the offense; or (3) three times the pecuniary damage or loss caused by the defendant to another, or the property of another, as a result of the offense (AS 12.55.035(c) **(1)** (B), (c)(2), and (c)(3))."

DEC Response: Errors to Appendix A, A-12 have been corrected.

3.8 3.8 Permit – Appendix B

Donlin Gold Comment: Donlin Gold noted that the Tailings Storage Facility (TSF) and Water Treatment Plant (WTP) definitions are missing from Appendix B.

DEC Response: Definitions for the Tailing Storage Facility (TSF) and Water Treatment Plant (WTP) have been added to Appendix B.

3.9 Fact Sheet – Section 2.2

Donlin Gold Comment: Donlin Gold requests that the following additional sources be added to the list of influent sources to the Water Treatment Plant:

- Incinerator scrubber water if wet scrubbers need to be installed
- Storm water collected from areas of the site not covered by the Multi- Sector General Permit or Construction General Permit that does not report directly to the Contact Water Dams.

DEC Response: The additional influent sources have been identified in Fact Sheet Section 2.2. Note this change does not effect the effluent limits in the permit, which are adequate to limit identified pollutants in these influent wastesteams.

3.10 Fact Sheet – Section 4.1

Donlin Gold Comment: Donlin Gold requests DEC add clarification that 40 CFR § 440 allows discharge of excess precipitation from tailings ponds and that the maximum volume that Donlin Gold proposes to discharges falls within the exemption.

DEC Response: Under 40 CFR § 440.104, New Source Performance Standards for gold, copper, lead, zinc, silver and molybdenum mines, discharge flow is limited to the net precipitation falling on the tailings storage facility and the drainage area contributing surface runoff to the tailings storage facility. Moreover under 40 CFR § 440.131, mine drainage and dewatering well water discharge flows are not limited. The permit limits discharge flow to 4,500 gallons per minute (gpm). According the wastewater management plan, 2,300 gpm of that comes from mine dewatering, 1,100 gpm comes from excess water in the Contact Water Dams, 800 gpm comes from Tailings Storage Facility (TSF) seepage, and 44 gpm comes from the TSF. At those rates, discharge from the TSF will not exceed net precipitation falling on the TSF. No changes were made to the permit or fact sheet as a result of this comment.

3.11 Fact Sheet – Section 4.3

Donlin Gold Comment: Monitoring at internal Outfall 010 is only required if Donlin Gold discharges treated domestic sewage to the Tailings Storage Facility (TSF). As discussed in the Draft Fact Sheet, Donlin Gold anticipates discharging treated domestic sewage under a separate APDES general permit and would only need to discharge treated domestic sewage to the TSF in the event of an upset or equipment failure. The second paragraph of Section 4.3 should clarify that the monitoring is only required if treated domestic sewage is discharged to the TSF. Donlin Gold requests that the last sentence of the second paragraph of Section 4.3 of the Draft Fact Sheet be revised as follows:

The Permittee is required to monitor discharges from the STP at an internal monitoring location immediately downstream of the last treatment process of the STP (designated as Outfall 010) for the parameters specified in Table 3 **[when discharging to the TSF]**.

DEC Response: The sentence referenced in this comment was revised as suggested in Fact Sheet Section 4.3.

3.12 Fact Sheet – Section 4.6, Table 6

Donlin Gold Comment: As noted in the comments to the Draft Permit, Donlin requests that the Department revise the time period for reporting BMP incidents to five days consistent with the provisions of Section 3.4.1.2 of the Standard Terms and Conditions relating to written reports.

DEC Response: In reference to Comment 3.2, inclusion of the reporting of BMP incidents within 24-hours of discovery was in error. The reference to BMP incident reporting was removed from the Fact Sheet Section 4.6, Table 6.

3.13 Fact Sheet – Section 7.0, Part 2

Donlin Gold Comment: Donlin Gold requested revisions to the second paragraph of Fact Sheet Section 7.0, Part 2.

DEC Response: Fact Sheet Section 7.0, Part 2, paragraph 2 was replaced with the following:

"Actual effluent data do not exist for the Donlin Gold Project. WTP effluent quality was estimated using conservative estimates of source water quality and data and best engineering judgement of treatment efficiency. Maximum expected effluent concentrations (MECs) were then derived using the highest calculated effluent concentration and the application of a conservative Coefficient of Variability and a conservative Reasonable Potential Multiplier. All chemical parameters with limits in Table 2, with the exception of TSS and WET, were determined to have reasonable potential to exceed WQS at the point of discharge. The relatively high number of parameters with reasonable potential is due to the conservative application of the MECs. Thus, effluent limits and corresponding monitoring was developed. The resulting effluent end-of-pipe limits and monitoring requirements in the permit protect water quality criteria, and therefore, will not violate water quality criteria found at 18 AAC 70.020."

3.14 Fact Sheet – Section 8.1

Donlin Gold Comment: Donlin Gold commented that the stipulation in Fact Sheet Section 8.1, "The permittee must also provide DEC written notice upon completion and implementation of the QAPP" is not contained in the Draft Permit. Consistent with the Draft Permit and other APDES Permits issued by

DEC, Donlin Gold will prepare and submit the QAPP to DEC at least 90 days prior to the first actual discharge. Donlin Gold believes the second notice described in Section 8.1 of the fact sheet is duplicative and not necessary.

DEC Response: The sentence identified in comment was deleted from Fact Sheet Section 8.1.

3.15 Fact Sheet – Figure 2

Donlin Gold Comment: Donlin Gold provided an undated replacement for Figure 2.

DEC Response: Fact Sheet Figure 2 was replaced by the figure provided in comment by Donlin Gold.

4 Public Comments

4.1 Antidegradation

Comment: DEC failed to comply with Clean Water Act (CWA) antidegradation requirements. DEC's determination does not take into account environmental risks and disruptions to location residents and traditional way of life.

DEC Response: The Department's approach to implementing the Antidegradation Policy, found in 18 AAC 70.015, is based on the requirements in 18 AAC 70 and the Department's Policy and Procedure Guidance for Interim Antidegradation Implementation Methods, dated July 14, 2010 (Interim Methods). The specific antidegradation evaluation criteria and subsequent analysis is provided in Fact Sheet Section 7.0. The criteria of concern expressed in the comment are not evaluation criteria of the State's Antidegradation Policy nor are those particular criteria described in the Interim Methods. The antidegradation analysis criteria correctly assesses impacts to water quality consistent with the criteria contained in 18 AAC 70.015 and the Interim Methods. No changes were made to the permit or fact sheet as a result of this comment.

4.2 Compliance and Monitoring

Comment: DEC must address concerns about compliance and monitoring before issuing the permit. The draft Environmental Impact Statement (EIS) and supporting documents did not contain expected levels of nitrate in the effluent from the water treatment system even though the permit establishes limits for the parameter.

DEC Response: DEC is not legally obligated to respond to items identified in EIS-related documents developed consistent with the National Environmental Policy Act when developing and responding to comments on APDES permits; these regulatory structures result in separate actions. When developing APDES permits, DEC evaluates the information contained in and the completeness of APDES applications. Nitrate (as N) data was submitted with the APDES permit application and was evaluated by DEC for reasonable potential to exceed water quality criteria using data and methods described in Fact Sheet Appendices B and C. An analysis of nitrate data indicated that there was reasonable potential for the parameter to exceed water quality criteria at the point of discharge. The analysis of nitrate was conducted in a method consistent with applicable Federal and State regulation, policy and guidance No changes were made to the permit or fact sheet as a result of this comment.

4.3 Alaska Constitutional Provisions for Concurrent Use

Comment: For DEC to issue a permit without having sufficient constitutional provisions in place between DNR and ADF&G, and the other resource managers, it is improper for permits to be issued by the agency in violation of the rights to sustain yield and reasonable concurrent use of Alaskan residents. I would request that any permit be coordinated to ensure that the in-perpetuity trust that would be needed to maintain water quality for both surface and subsurface aquifers be sufficiently funded to adjust for higher standards of water treatment that may be found in the future and/or any catastrophic releases. And that only, and unless and until the permitting is coordinated in a manner between the responsible state agencies to ensure that the constitutional provisions to due compensation when reasonable concurrent uses are violated, that the present plan for permit issuance is arbitrary, capricious, and in violation of the constitutional rights of all natural resources that may be affected by the operations being permitted.

DEC Response: The statutory mandates in the CWA and AS 46.03 and regulatory requirements in 18 AAC 83 and 70 for protection of water quality were followed in the development of the permit. Coordination between the state agencies requested by the commenter is not required for issuance of an APDES permit; however, both DNR and ADF&G were provided an opportunity to review and provide comment on the draft permit documents. The comment suggests that financial assurances be provided for surface and groundwater protection. The CWA and AS 46.03 do not require bonding for APDES permits. DEC requires financial assurance for site closure and long-term maintenance, treatment and monitoring is implemented through the Waste Management Permit under statutory and regulatory authorities AS 46.03.100, 18 AAC 60 and 18 AAC 72. No changes were made to the permit or fact sheet as a result of this comment.

4.4 Permit Limits

Comment: DEC must also consider the effects of reduced flow in Crooked Creek on water quality. Although the amount of water in the stream would not affect concentrations of pollutants in the effluent released from the water treatment system, less water would mean that the resulting concentrations in Crooked Creek would be higher. Furthermore, reductions in streamflow could have significant effects on salmon habitat, which would be compounded with the harms from pollution. DEC does have an obligation to ensure that degradation of a Tier 2 water body will not impair existing uses, so it must consider the effects of reduced flow when deciding whether to grant a permit.

DEC Response: The annual change in flow in Crooked Creek was evaluated as a part of the development of the permit. Except during construction when dewatering water will be treated and discharged potentially year around, the proposed facility does not plan to discharge during the winter months when flow in the creek is lowest to further ensure water quality and habitat protection. Further, since there is no authorized mixing zone in the permit and that water quality criteria are required to be met at the point of discharge prior to mixing with Crooked Creek, existing uses of Crooked Creek by extension are protected by the terms of the permit. No changes were made to the permit or fact sheet as a result of this comment.

Comment: Even assuming the water treatment system would bring the mine's discharges within parameters under normal operating conditions, its maximum design capacity (4,750 gallons per minute) is troublingly close to the anticipated maximum treatment rate (4,500 gallons per minute). Should an unexpected influx of water occur, as during a large rainstorm, large rain on- snow event, or if mining intercepts a deep bedrock aquifer, Donlin Gold's water balance model might not accurately predict the

amount of water needing treatment. DEC should take into account the unlikely but potentially significant water quality effects of a 100-year storm, which could more than double the amount of rainfall over 24 hours from the largest storm expected every two years and overwhelm the water treatment system.

DEC Response: The flow limit considers the treatment system capacity, receiving water characteristics and facility footprint. Increases in influent from storm events are typically addressed for large mine projects by designing the facility (e.g., TSF) to have the storage capacity to handle containment of water from storm events to eventually be processed through the treatment plant for discharge. Oversight of reservoir design and operation are addressed in other permits issued by the State where holding of water associated with storm events is contemplated prior to approval/authorization. DEC administers the WMP, where the commenter's particular concern is closely evaluated, as well as closely coordinates with DNR on other related approvals/authorizations to collectively address these types of concerns. No changes were made to the permit or fact sheet as a result of this comment.

Comment: Temperature changes resulting from mining could also affect aquatic life in Crooked Creek. The Draft Environmental Impact Statement (DEIS) downplays the issue by suggesting that surface-water inputs would counteract any warming from treated groundwater discharged into the creek. Yet the DEIS also notes that, during mining operations in the summer, "reductions in groundwater inputs to Crooked Creek could cause stream temperatures in reaches near the mine to be close to or above the State of Alaska's water quality temperature standard for egg/fry incubation and spawning and migration and rearing." Indeed, temperature is included among the State of Alaska's water quality criteria, with stricter standards for areas fish use for migration and spawning. DEC must specify a temperature limit for Donlin Gold's proposed discharges in order to protect existing uses; it makes little sense to require monitoring of this parameter without explicitly stating a limit in the permit.

DEC Response: Alaska water quality regulation 18 AAC 70.020(b)(10) specifies the standards of temperature for fresh water uses. The most stringent standard for temperature is 13ºC (approximately 55ºF) for water supply – aquaculture, spawning areas and egg & fry incubation and Growth and Propagation of Fish, Shellfish, other Aquatic Life, and Wildlife uses. The next most stringent standard for temperature is 15ºC (approximately 59ºF) for water supply – drinking, culinary, and food processing.

A review of the proposed facility water management and water treatment systems indicates that significant temperature change to wastewater relative to influent temperature is not expected to occur at the wastewater storage or treatment processes that would exceed the temperature criteria of 13ºC at the point of discharge. Much of the effluent will be from pit dewatering sources, which have significantly lower temperatures than surface water during the period of water treatment plant operation and discharge at the proposed facility during mine operations. Since the water source temperature is typically lower than surface water during the period of proposed discharge and that there are no significant thermal inputs within the wastewater treatment system, there is no cause to require temperature limits in this permit.

However, the permit was modified to include a temperature monitoring requirement to verify this technically-based assumption.

4.5 Environmental Concerns

Comment: Mercury deposition could be a major problem for a facility that will be grinding and heating ore in a region with above-average baseline mercury concentrations. In the background section of its fact

sheet, DEC notes that "[s]tate of the art mercury abatement controls would be installed at each of the major thermal sources, including the autoclave, carbon kiln, gold furnaces, and retort," but it does not discuss the issue further. The DEIS for the project, however, discloses that mercury deposition in nearby watersheds could increase by about 42 percent due to mining operations. Increases to biologically available methylmercury could be similarly substantial. The DEIS acknowledges that mercury pollution might push surface water above the applicable chronic criterion but dismisses that concern because some existing concentrations already exceed the limit. DEC cannot ignore the potential consequences of increased mercury deposition for existing uses of Crooked Creek when deciding whether to issue a permit.

DEC Response: The legal jurisdiction of the permit addresses mercury as a parameter of concern in the effluent discharge and establishes permit numeric limits for mercury consistent with 18 AAC 83 and 70 that are protective of the existing uses of Crooked Creek ensuring the legal mandates of the CWA and AS 46.03 are met. (As a reminder, no mixing zone authorizing excursions of the mercury water quality criteria in 18 AAC 70 are established in the permit.) The concern regarding mercury deposition is related to activities that are outside the jurisdiction of the permit. No changes were made to the permit or fact sheet as a result of this comment.

Comment: Donlin Gold has to re-apply every five-years for the wastewater discharge permit. What will happen if Donlin Gold goes bankrupt, and can no longer reapply for the permit and can no longer manage the untreated wastewater? What will DEC do to ensure that this does not happen? Because the wastewater has to be treated, forever, I would like to make sure that the local subsistence users along the Kuskokwim River are protected.

DEC Response: The State requires that the project proponent provide financial assurance via the WMP so that in the event of a default, sufficient funds are available to the State at its determination to conduct reclamation, maintenance and long-term management of the facility. The financial assurance requirement is a requirement of the DEC WMP (the Draft WMP was co-noticed with the APDES permit) and the DNR Reclamation and Closure Plan Approval. Financial assurance for APDES permits is not mandated by the CWA or AS 46.03 or other state legal requirement. No changes were made to the permit or fact sheet as a result of this comment.

4.6 Monitoring & Reporting

Comment: The draft permit requires the mine to submit DEC water reports on different timelines. It is suggested by others to promote transparency that these reports be posted regularly on a public website and easily understood by the public. It is also encouraged that any upsets be reported within a few weeks and also corrective measures that will be taken explained to the public. This will go a long way in showing the public that Donlin is being open, protective of our waters.

The draft permit requires Donlin to submit monthly effluent sampling results and to submit these and quarterly results from monitoring Crooked Creek in an annual report. We would suggest that to promote transparency, and maintain a heightened awareness of the importance of water quality, that monthly and quarterly results be posted by Donlin on a publicly available website, and should include the range and average pH and turbidity readings. Upsets in the system that result in exceeding permit conditions are required to be communicated orally to DEC within 24 hours and in writing to DEC within 5 days. We

would suggest that upsets in the system also be posted by Donlin on a publicly available website within 30 days of the event, along with measures taken to return to compliance.

DEC Response: DEC disseminates publicly available information through several web-based venues, including: permit compliance results of APDES permits through EPA at the following website: https://echo.epa.gov/; copies of the final permit and related documents are available at: http://dec.alaska.gov/Applications/Water/WaterPermitSearch/Search.aspx; and, facility-specific information including; agency permits, State-approved plans, annual reports and other information of public interest are provided at the DNR Large Mine Permitting website at: http://dnr.alaska.gov/mlw/mining/largemine/. For report submittals that are not available at the above locations, information subject to the Alaska Public Records Act will be provided upon written request. No changes were made to the permit or fact sheet as a result of this comment.

Comment: The monitoring requirements proposed in the draft permit are not adequate to ensure that discharges from the mine will comply with effluent limitations. DEC has set mostly weekly sample frequencies, with no explanation. The agency must include some rationale for its decision as to monitoring frequency, addressing each of the factors that EPA has identified as relevant.

DEC Response: The comment states that the monitoring proposed in the draft permit is not adequate to ensure discharges form the mine will comply with effluent limitations and justification is necessary for the proposed monitoring frequency. The regulations at 18 AAC 83.455(a)(4) requires that APDES permits must include monitoring sufficient to assure compliance with permit limitations. Effluent monitoring for the parameters of concerns was set at weekly monitoring on the basis that the facility will begin discharge at year two or three of the permit duration and that the discharge is unlikely to have significant variation given the sources of the wastewater (e.g., mine dewatering). For weekly-required monitoring, 52 data points per year would be collected. Weekly monitoring was established in part, to ensure that there will be a statistically significant amount of effluent data for analysis in future permit reissuance as well as to track effluent variability. Weekly monitoring for parameters of concern is as stringent as or greater than monitoring required for other mine facilities permitted in the State and adequate to assess any unexpected effluent variability. No changes were made to the permit or fact sheet as a result of this comment.

Comment: Consider adding a monitoring station at CCBO.

DEC Response: CCBO – quarterly monitoring for parameters of concern are included in the WMP. No changes were made to the permit or fact sheet as a result of this comment.

Comment: Some analytes were analyzed with methods that were not sufficiently sensitive; e.g., cadmium at monitoring site CCBO (near the proposed outfall) had much of the analysis done with method detection limits of 0.5 micrograms per liter (ug/L), when water quality criteria would require that cadmium be between 0.15 and 0.25 ug/L, depending on water hardness. We agree with the permit requirements to utilize sufficiently sensitive analytical methods going forward, for both effluent and receiving water analysis.

DEC Response: DEC concurs with the comment statement. No changes were made to the permit or fact sheet as a result of this comment.

Comment: The permit should specify numerical limits that must be met at the downstream monitoring station for the same parameters as for water treatment plant (WTP) effluent. An additional quarterly monitoring station should be set up at CCBO, directly downstream of the WTP discharge pipe but upstream of the tailings facility. This could help to isolate any observed water quality criteria (WQC) excursions to determine whether the source is the WTP or uncaptured seepage from the TSF. An additional station would not be an onerous cost.

The permit does not define violations of water quality standards downstream of the outfall and does not prompt corrective action when monitoring results there indicate an increase in concentrations of contaminants over baseline levels. DEC must remedy this shortcoming before it can issue a permit.

The permit does not require baseline or specific WQC to be met at the downstream monitoring station, CCBW, located downstream of all mine facilities but upstream of the confluence with the Kuskokwim. Stream water is to be collected quarterly to monitor whether water quality is changing, but the permit does not outline any steps to be taken or repercussions if water quality is found to be degraded. It does not state how an observed change from baseline will be interpreted. At what point does a change constitute degradation? At what point does a change indicate a potential problem with effluent? And given that the downstream monitoring point is below all mine facilities, how could a change point to a problem at the WTP versus another issue, such as unexpected seepage from the TSF?

The DEC permit requires only monitoring of certain parameters downstream of the water treatment plant's outfall. There are no specified criterion limits on contamination or enforced corrective legal actions or requirement of savings for the protection of the environment, animals, fisheries, people, and wellbeing of the Kuskokwim drainage. Nor do the requirements over time extend to the outreached villages at the mouth of river.

DEC Response: The permit requires receiving water monitoring at two stations, receiving water monitoring station CCBW is located upstream of Outfall 001 and receiving water monitoring stations CCBC is located downstream of Outfall 001, for the purpose of determining if the authorized discharge is affecting the uses of the receiving water. The receiving water monitoring stations are not associated with numerical permit limitations, but for tracking compliance with WQS in the waterbody. DEC will evaluate any in-stream WQS violations to determine appropriate remedies including compliance actions consistent with the CWA, AS 46, and 18 AAC 83.

The permit is developed in accordance with the CWA (predominately Section 402) and applicable State of Alaska statutes (AS 46.03) and regulations (18 AAC 83 and 70) under the EPA-approved APDES Program. Per Appendix A – Standard Conditions, Section 3.1, "A permittee must collect effluent samples from the effluent stream after the last treatment unit before discharging into the receiving waters. Samples and measurements must be representative of the volume and nature of the monitored activity of discharge." The permit only authorizes the discharge of treated wastewater from the outfalls explicitly referenced by the permit and not other discharge locations (e.g., seepage from the TSF); any such unauthorized discharge is a violation of the CWA and subject to compliance actions. The APDES Program establishes the point of compliance for an authorized discharge at a monitoring point located between the last wastewater treatment process and the outfall, especially when a mixing zone is not authorized. As such, the permit requires that water quality criteria be met prior to mixing with the

receiving water thereby ensuring existing use protection (e.g., protection of fish life stage development) consistent with 18 AAC 70.

The role of the downstream receiving water monitoring location is used, in part, to confirm that the effluent is not affecting the uses of the receiving water; however, it is not a monitoring location with applicable limits but will provide valuable information to the Department on the water quality of Crooked Creek. No changes were made to the permit or fact sheet as a result of this comment.

Comment: Samples from the creek would be taken quarterly and test results reported to DEC annually. These requirements are inadequate. Crooked Creek is a corridor traveled by fish to reach productive areas such as Bell Creek and Getmuna Creek, which do not appear in maps in the permit documents. DEC should fully disclose the potential impacts of pollution from the mine on aquatic resources and impose stringent requirements for monitoring and maintaining instream water quality.

There is sufficient baseline to understand the range of natural variability at this location, and additional baseline could be collected prior to the commencement of mining operations. Excursions outside the natural variability, based on season, should be reported. Consideration should be given for storm events, which can quickly but briefly mobilize sediment, but water samples should remain within the natural seasonal range observed in baseline sampling. We are most concerned that the permit states "downstream water quality" will be met but does not define what "meeting" water quality means – which could be a way to essentially allow a mixing zone.

DEC Response: The permit establishes quarterly receiving water monitoring at stations upstream and downstream of Outfall 001 for all parameters included in the Outfall 001 effluent monitoring. Based on agency judgement given expected limited effluent variability and water body characteristics, the quarterly monitoring is an adequate frequency to provide enough data to determine if the water body uses are affected by the authorized discharge. All monitoring data collected under the permit must be reported in the Discharge Monitoring Report which is due monthly and in the Annual Report, due by March 1 of the year following the year of data collection.

Comment: Consider adding steps to understand the watershed system, such as a more robust set of data on hardness, monthly monitoring of pH and conductivity on Crooked Creek, and water sampling during high flow (storm water, spring runoff) and low flow periods to determine true variability and better understand the controls on risks to aquatic life.

DEC Response: The permit establishes monitoring from which the collected data is used to determine compliance with the permit requirements including limitations. The monitoring requirements in the permit are not intended to provide data for the purpose of characterizing the watershed of the proposed project. However, the monitoring requirements of the proposed Waste Management Permit 2018DB0001 do include receiving water monitoring at 15 stations in the Crooked Creek watershed for the parameters of concern that would provide watershed water quality information that will be used to further the understanding of the watershed and to determine any watershed water quality impacts from mine development and operation of the proposed facilities.

Comment: At the effluent, pH is to be monitored continuously. We would suggest that the parameters relevant to metal precipitation or dissolution – pH and conductivity – be monitored monthly at Crooked

Creek receiving water monitoring stations. This can be done with a hand-held meter and would not be an onerous cost, but would provide fundamental information to augment quarterly metals data.

Regular quarterly monitoring at the upstream (control) and downstream stations should be augmented by samples collected during storm events and during low flow. This would provide information on natural variability (upstream location CCBW), variability related to effluent (CCBO) and variability related to other factors (CCBC). Turbidity, total metals, and dissolved metals need to be included when storm flows are targeted. This would provide information on the nature of the form of metals that enters the environment, and the true range of variability. Any significant difference in water quality between the upstream and downstream stations, particularly in concentrations of dissolved metals, could indicate seepage, runoff, or other issues.

DEC Response: DEC has determined that the quarterly monitoring of receiving water monitoring for pH and conductivity, proposed in the draft permit, meets the requirement of 18 AAC 83.455 and is adequate to characterize the receiving water and provide data necessary to evaluate permit compliance and protection of receiving water uses. No changes were made to the permit or fact sheet as a result of this comment.

Comment: The permit requires effluent to have no more than 12 ug/L of antimony (Sb) as a maximum daily limit. However in Section 2.8, a discharger does not need to notify DEC unless an upset occurs that could release up 1 milligrams per liter (mg/L) of Sb. Only Sb is singled out in this way. Please clarify this. Clarify the discrepancy between a 12 ug/L maximum limit on Sb in the effluent and a requirement to report conditions that could release 1,000 ug/L (1 mg/L) of Sb.

DEC Response: The comment notes that the permit limit for antimony is 12 µg/L while Permit Appendix A – Standard Conditions, Section 2.8 requires the permittee to report to the Department any release of antimony exceeding 1,000 µg/L. The Standard Conditions in Appendix A are based on 18 AAC 83 regulations and are intended to apply to all permits issued under the APDES program. Both the permit limit of 12 µg/L and the reporting of exceedances of 1,000 µg/L for antimony apply. Since the design of the water treatment system is developed to meet the permit limit, which is significantly more stringent than the 1,000 µg/L reporting limit, an exceedance of the reporting limit would be unlikely. No changes were made to the permit or fact sheet as a result of this comment.

Comment: Donlin Gold cannot be allowed to conduct their own testing. This would be the fox minding the chicken house. A third party with no strings attached must be contracted to do all the testing and reporting at Donlin Gold's expense. Furthermore the villages downriver from the mine must also have testing capability and the resources to respond in the event of any failure.

DEC Response: Self reporting for compliance with APDES permit monitoring requirements is consistent with applicable regulations and CWA. The Department conducts a critical review of the self-reported data prior to and during compliance inspections during the permit cycle as well as during permit reissuance along with facility compliance history to inform decisions relevant to the next permit cycle, potentially resulting in reduced monitoring requirements if the record demonstrates consistent compliance. Conversely, poor monitoring performance or noncompliance potentially results enforcement actions and/or an increase in monitoring frequency requirements or other permit requirements to ensure compliance with the CWA and WQS.

Self-monitoring and reporting is a cornerstone of the CWA. CWA 308(a)(4)(A) requires that permits contain self-monitoring requirements:

"the Administrator shall require the owner or operator of any point source to (i) establish and maintain such records, (ii) make such reports, (iii) install, use, and maintain such monitoring equipment or methods (including, where appropriate, biological monitoring methods), (iv) sample such effluents (in accordance with such methods, at such locations, at such intervals, and in such manner as the Administrator shall prescribe), and (v) provide such other information as he may reasonably require"

Note that the permittee must certify under penalty of law the validity of its sampling results with each DMR submitted to the permitting authority. DEC and EPA conduct routine inspections at large mines. These inspections are typically scheduled based on reviewing the self-reported data. Regarding the comment that suggests that, "villages downriver from the mine must also have testing capability and the resources to respond in the event of any failure," is beyond the jurisdiction of the APDES permitting program. No changes were made to the permit or fact sheet as a result of this comment.

4.7 Public Notice

Comment: As the EIS has not been completed nor a record of decision made for the Donlin Gold Project how can DEC or any member of the public make an informed decision or supply adequate comments on the project in regards to permitting? The issuance of an APDES permit prior to the EIS completion seems unethical and a disservice to the Alaskan public. Please allow the completion of the Donlin Gold Project EIS, a published record of decision, and adequate time for the public to read and review the finalized document before additional public notice and considerations of permitting of the project. These are long term decisions that can have a large impact on the environment. A well informed decision should be made not a general inference from a draft document.

DEC Response: The permit was issued after completion of the EIS. However, APDES permit actions are not contingent upon the completion of the National Environmental Policy Act EIS process. APDES permits are developed based on information submitted to DEC in APDES applications. If Donlin Gold is required to change operations due to any reason including a different agency's final decision and/or authorization, Donlin Gold may have to request an APDES permit modification to address the change. Major APDES permit modifications must undergo a public notice and comment response process. No changes were made to the permit or fact sheet as a result of this comment.

Comment: DEC is requested to extend the comment period for both permits combined from 60 days to at least 90 days.

DEC Response: Consideration to extend a comment period for a publicly notice permit is dependent on the public interest expressed. DEC determined that limited public interest in a longer comment period did not warrant extending the comment period as only one comment requesting an extension of the comment period was received. No changes were made to the permit or fact sheet as a result of this comment.

Comment: One comment was received requesting a public meeting and hearing at the Village of Crooked Creek, Chuathbaluk and other villages in the region.

DEC Response: Consideration of other locations to hold public meetings and hearings for a publicly noticed permit is dependent on the public interest expressed. DEC determined that limited public interest in other locations did not warrant additional hearing locations as only two individuals made such a request. In addition, the Anchorage public meeting and hearing had call-in capabilities. No changes were made to the permit or fact sheet as a result of this comment.

Comment: DEC was requested to provide someone who can explain the permits that Donlin Gold is applying for in layperson terms. Another commenter suggested to public notice the permit through Facebook as it is a common method of communication in the villages.

DEC should also inform residents and the public that water treatment will be needed in perpetuity, with permits granted every five years, forever. It should acknowledge that it has never before knowingly permitted a project that would need permits well beyond its operating life. The unprecedented scale—both spatial and temporal—of this project calls for an especially careful, transparent process shaped by input from a fully informed public.

DEC Response: DEC strives to provide meaningful and comprehensible information of proposed actions to the public in order to receive constructive comment to develop permits that are protective of human health and the environment and reflective of local conditions. The minimum requirements for noticing the public of a proposed permit action are established in regulation (18 AAC 15 and 18 AAC 83) and in the APDES Program Description, amended August 11, 2011. A summary of the actions taken toward communicating the proposed permit decision is summarized Section 1.2 of this document. DEC has met and surpassed the regulatory requirements for public notification in that the Department held a total of three hearings and meetings on the draft permit and the regulations; however, the outreach and explanation suggestions presented in the comment will be considered for future implementation to further improve the process.

Regarding the request that DEC notify the public that the project will entail long-term, post-mining facility maintenance, water treatment and monitoring, the Department noticed and provided post-mining information as a part of the draft WMP, which was co-noticed with the APDES permit. Since the CWA and AS 46.03 do not require bonding for APDES permits, the APDES permit does not address post-mining, long-term water treatment as a part of its notification requirement. DEC required financial assurance for site closure and long-term maintenance, treatment and monitoring is implemented through the Waste Management Permit under statutory and regulatory authorities AS 46.03.100, 18 AAC 60 and 18 AAC 72. No changes were made to the permit or fact sheet as a result of this comment.

4.8 Water Treatment

Comment: A statement in the fact sheet suggests that not treating pit water will help maintain surface water quality. In addition, it has been shown that aquatic species subject to WET tests often require some levels of essential minerals. By not using RO to treat all the pit perimeter well water, some of the natural minerals and the associated ionic balance will be maintained in the effluent. This will further ensure the health and survivability of the organisms that use in Crooked Creek. This is only true if a) pit water is an overwhelmingly large source to the receiving water and b) pit water mirrors surface water quality. It also depends on the form of the metal – aluminum that is part of particulates in surface water, from eroding soil, has no toxicity to aquatic organisms while aluminum that is in a dissolved form in groundwater and enters surface water to form white stringy flocculants does indeed pose harm to aquatic life, particularly

fish. Similarly arsenic which is bound up within minerals on eroded particles is much less of a health hazard than arsenic that is mobilized due to changing redox, entering surface water as dissolved arsenic. Aluminum and arsenic are the two metals of concern in groundwater in that they may not be well-removed without passing pit water through an RO system. Describe how Al, As, and TDS will be removed from pit dewatering wells if the water bypasses the RO systems.

DEC Response: The comment asks how aluminum, arsenic and TDS will be removed from pit dewatering well water if it is bypassed by the RO system. First, all wastewater under this permit will be treated through the primary water treatment plant using a high rate clarifier and greensand filtration with chemical addition. If pre-discharged effluent concentrations indicate permit limit concerns, a percentage of the treated effluent will be treated by RO and mixed with the primary treated effluent before discharging through the outfall into Crooked Creek. The table below, excerpted from the permit application, describes the predicted removal performance for the parameters in question, based on predicted influent quality and treatment system efficacy.

Parameter	Predicted Removal by Treatment System		
	High Rate Clarifier	Greensand Media Filtration	Reverse Osmosis
Aluminum	~85%	Not Assessed	97%
Arsenic	~90%	~75%	91%
Total Dissolved Solids	Not Assessed	Not Assessed	97%

In addition, the permit does not mandate a particular type of treatment, but requires compliance with WQS at the point of discharge without the benefit of dilution from a mixing zone. So regardless of the type of treatment system employed, the effluent still must meet WQS to be in permit compliance. No changes were made to the permit or fact sheet as a result of this comment.

Comment: It is inappropriate for the agency to consider the supposed benefits to aquatic life of adding minerals to streams when the need for supplemental minerals in Crooked Creek, which supports fish in its natural state, is purely speculative and likely depends on voluminous discharges to the creek. Yet schematics show that freshwater flow from Anaconda Creek just downstream of the water treatment plant's outfall would be equivalent to, or four times greater than, the discharge flow. Realistically, the degree to which effluent makes up the volume of water in reaches immediately below the outfall will be seasonal. At any rate, the enhancement of some biological conditions is irrelevant to the determination whether the mine's discharges would change ambient water quality, violate water quality criteria, or cause toxicity such that they would degrade water quality.

DEC Response: The comment mischaracterizes the treatment train and purpose for blending RO effluent with non-RO treated effluent. As described in Fact Sheet Section 2.2, RO is a polishing step of the primary treatment process to ensure compliance with permit limits if the primary treatment system effluent is not sufficient to ensure compliance. RO effluent is proposed to be blended with treated effluent from the primary water treatment system to resolve potential ionic imbalances between the RO effluent and the receiving water that may be detrimental to aquatic life. No changes were made to the permit or fact sheet as a result of this comment.

Comment: There will be need for cleaning/replacement of greensand and antifouling, anti-scalant, water pretreatment and other maintenance for the RO system. This is critical to providing clean water for discharge. Maintenance and cleaning are needed to prevent greensand from clogging with iron (letting manganese pass on), and prevent RO membranes from clogging with particles or puncture by gypsum crystals (become ineffective in separating contaminants from clean water). High quality RO maintenance needs to be conducted throughout the ups and downs of the mine life cycle and metal prices, and needs to be done in perpetuity after the mine closes. While the proposed system is a good one if and when it is operating at top efficiency, reaching and maintaining efficiency may not be trivial.

DEC Response: The permit requires proper operation and maintenance of all treatment systems and their appurtenances. See Permit Part 1.6 in Appendix A. No changes were made to the permit or fact sheet as a result of this comment.

Comment: Has Donlin Gold shown that its simulated treatment plan works in an actual pilot plant? What they say they will do, will it work? Where is the pilot plant?

DEC Response: A pilot plant study was not conducted. The predicted effluent quality was based on field collected groundwater quality data and manufacturer provided treatment system specifications. Regardless of the demonstration of a pilot study, the permit includes requirements to protect water quality consistent with 18 AAC 70. Donlin Gold must meet these requirements to ensure compliance with the permit. No changes were made to the permit or fact sheet as a result of this comment.

Comment: The water treatment plant will operate for only seven months of the year, as outlined in their plan. What if there is too much water. Can the plant be started up at 30 below zero, if the mine breaches unknown water fractures which could produce too much water?

DEC Response: During the winter months, when Crooked Creek is largely frozen, the permittee does not plan to discharge during operations. The facility is designed to have the storage capacity to handle containment of water from storm events and periods of non-discharge to eventually be processed through the treatment plant for discharge through the outfall. Oversight of reservoir design and operation are addressed in other permits issued by the State. No changes were made to the permit or fact sheet as a result of this comment.

4.9 Whole Effluent Toxicity (WET)

Comment: WET testing should be on relevant species. Proposed testing of effluent toxicity should not be done on the fathead minnow, a common lab test fish that is resilient to metals, but rather on coho salmon, which is also a common lab fish, but one that is sensitive to metals. WET limits could be derived with simulated effluent, or at the bare minimum the permit should state that quarterly testing WILL be used to establish WET limits, not COULD be used, and they should be applied to this permit, which will likely be for a period of five years, not a future permit. A requirement to perform WET testing without any structure bounding when the tests indicate a problem with the system is inadequate, in the same way that requiring monitoring in Crooked Creek without defining the limits that will indicate when there is a problem. Both would allow the company to potentially degrade water quality without repercussions. Clearly state what is meant by "meeting downstream water quality", including the point at which baseline water quality conditions must be met, and the numerical values of constituents required for water to stay within baseline variability. Downstream monitoring stations should not have a vague purpose of

monitoring trends in changes, but have firm regulatory and legal requirements to be met. Similarly, WET testing should not be to generally monitor effects, but should have sound regulatory limits and defined boundaries that, when exceeded, result in repercussions. These should apply during this permit period, and not be delayed until future re-applications. Require sensitive and relevant species for WET testing, such as coho.

The fact sheet identifies that WET testing will be monitored on a quarterly basis at the beginning of the first discharge to determine the toxicity levels to biological organisms. This is a laboratory test, if I understand it correctly, and they'll be using organisms that are not indigenous to this region. I do understand that they are following protocols established by the EPA. However, the interval of that testing on a quarterly basis only gives you a sample size of four in a year, which in my mind is not very much or really inadequate to establish the baseline that you would require in a relatively short period of time to determine whether or not you need to continue more intensive monitoring and testing of that.

I have grave concerns over the water quality of Crooked Creek during the operation and following closure if the Donlin Gold mine, probably the largest mine built to date in the State, were to be permitted and proceed with construction and operation at any time in the future. Here are my concerns regarding the draft APDES wastewater discharge permit: 1) the Whole Effluent Toxicity Tests (WET) will not use endemic species like coho salmon. 2) That the WET tests are to be taken quarterly; monitoring at this frequency may miss storm events and low flow periods that could cause or contribute to deleterious degradation. 3) The permit should specify actual WQC limits intended to be met at the downstream monitoring sites.

Whole effluent testing should be at the lowest point that mine contamination can possibly enter Crooked Creek. It should have definite limits and when exceeded, there should be immediate regulatory action and the plant shut down until corrected. Whole effluent testing should be done using local species of fish. We want to know what would be toxic to our fish rather than normal lab fish used by many testing laboratories.

DEC Response: WET testing measures the combined effect of an effluent on aquatic organisms. Since WET testing is a laboratory procedure conducted on site-specific effluent, it must strictly adhere to procedures in order to measure reproducible data representative of water quality regardless of circumstances in the receiving water. The WET test species, green alga, water flea, and fathead minnow, are prescribed by test methods, referenced and required by state regulations at 18 AAC 70.030 (commonly referred to as the West Coast Methods) and described in EPA guidance. Furthermore, the permit contains robust monitoring of individual parameters of concern that would be the likely reason for any identified toxicity; as such, the individual parameters are limited to ensure that toxicity does not occur. Based on agency judgement given expected limited effluent variability and water body characteristics as well as robust indicator toxicity parameter monitoring, quarterly WET monitoring is an adequate frequency to provide the data necessary to characterize effluent toxicity of the discharge to the receiving water aquatic life. No changes were made to the permit or fact sheet as a result of this comment.

Comment: A permanent lab in Crooked Creek, run by a third party that would test native fish of Crooked Creek for as long as the water treatment facility at the mine is needed. Using local species and not just regular lab minnows. Local residents would be involved with this project. As long as the resident fish can survive and prosper in the Donlin wastewater that they plan on releasing into the creek then that would go

along way in making sure the DEC parameters are justified. If the facility fish die or show signs of problems from the mine release water then we might have a better tool for some type of corrective action or even mine shut down until local fish can thrive in the mine outfall. There could be a time where the mine treatment outfall could be the only water entering the creek down stream of the project. This could be our canary. Local residents running a fish lab using Donlin water would go along way in making sure the public felt engaged in the whole process.

DEC Response: APDES legal requirements do not allow for DEC to mandate that a third-party have control over permitting elements. However, biomonitoring, as suggested in the comment, is a significant component of the Donlin Gold Project's monitoring plan, which is adopted by reference in the proposed WMP. The portion of the comment regarding resident species is responded to in the previous comment. No changes were made to the permit or fact sheet as a result of this comment.

Comment: Regarding discharges from the water treatment plant, DEC avoids its responsibility to limit whole effluent toxicity (WET) to aquatic organisms by observing that "no effluent monitoring data for WET are currently available" and suggesting that it might impose a limit once it has the results of Donlin Gold's testing on aquatic organisms, conducted during mine operations. This approach inverts the proper order of analysis and allows harm to species that DEC's regulations are designed to protect.

DEC Response: A permit limit is established for a given parameter if it is required under an EPA-promulgated industry specific Effluent Limit Guidelines (ELG), or if the parameters is determined to have reasonable potential to exceed water quality stands at the point of discharge (or at the boundary of an authorized mixing zone if one is authorized). The reasonable potential analysis and permit limit development is described in detail in Fact Sheet Appendices B - D. Since this proposed permit is the first to be issued to the Donlin Gold Project, there is no effluent WET results in which to base a permit limit. Absent actual or theoretical data to support the development of a permit limit for WET, the Department has determined it appropriate to require monitoring for WET on a quarterly basis. As referenced in the previous comment, the individual pollutants that could potentially cause toxicity are limited by the permit to ensure compliance with State WQS. No changes were made to the permit or fact sheet as a result of this comment.

4.10 Water Quality Standards

Comment: As future water quality science and regulations become available, Donlin Gold should be held to those new standards when their permits are renewed. Do not - - let's not grandfather Donlin in the past standards.

Donlin Gold is well aware of the ongoing efforts by the Alaska DEC to improve protections to waters from which people consume fish by updating "Human Health Criteria" (HHC) in state water quality standards. When these future regulations are rolled out, the "most stringent" WQC may be more stringent than the current ones. We would like assurance that APDES permitting in 2018 will not "grandfather in" Donlin, and that Donlin will be required to meet most stringent WQC when the APDES permit is renewed. This is particularly important given the extent to which people on the Kuskokwim rely on locally caught fish.

DEC Response: The promulgation of new or revised regulations related to the APDES Program are effective upon the Lt. Governor's signature and EPA approval for CWA purposes (e.g., APDES

permitting). Implementation of the new regulations and its effect on existing permits may be immediate (possibly requiring a permit modification) or its application may be delayed until permit reissuance, depending on the approved implementation of the regulation. At this time, updates to the Water Quality Standards regarding Human Health Criteria is in development and implementation of the new regulations have not been determined. No changes were made to the permit or fact sheet as a result of this comment.

Comment: The draft permit does not ensure the protection of existing uses of surface waters in the Crooked Creek basin, as required by the federal CWA and the EPA and DEC's implementing regulations. The people of the Kuskokwim River heavily rely on the water bodies of the Yukon- Kuskokwim River. The Kuskokwim River is a place of sanctuary, used as a religious sacrament, a direct unfiltered source used for drinking, bathing, cleansing of subsistence foods, and everything that is needed with water. It is therefore essential that any permit DEC issues permits that contain provisions that will safeguard aquatic life, as well as human life and health, by preserving water quality.

DEC must find that worsened water quality will be adequate to protect the existing uses of the water and consider all the ways in which a project might degrade water quality, not just the project's discharges of pollutants.

The draft permit does not ensure the protection of existing uses of surface waters in the Crooked Creek basin, as required by the federal CWA and the EPA and DEC's implementing regulations. Salmon species spawn and rear in Crooked Creek and its tributaries and are sensitive to contaminants such as sediment, mercury, and other metals.

The permit states that there will be no mixing zones. The permit states that the downstream water quality will be met, but doesn't define what that means. If I've read correctly, the permit doesn't require baseline water quality criteria at the downstream monitoring station known as CCBC. What happens if the water quality at CCBC shows a problem or degradation? Does this constitute a mixing zone? What are the ramifications? Shouldn't the mine be shut down until this is corrected? There should be a monitoring station at the lowest point below any possible leakage at the mine site.

DEC Response: The purpose of receiving water monitoring at monitoring station CCBC is to provide water quality information downstream of outfall 001 to determine if the water uses are affected by the permitted discharge. Since no mixing zone is authorized under the permit, compliance with the permit limits is determined at the point of compliance measured at a location between the last treatment process and prior to the point of discharge at outfall 001. If the monitoring data indicate a increase in the concentration of the parameters of concern, it would trigger the Department to closely review the corresponding effluent data, stream flow and other activities at the site that may point to the cause or source of the change to water quality of the receiving water. If the cause or source of the change in water quality of the receiving water is attributed to the discharge at outfall 001, the Department would require the permittee to evaluate and take corrective action to return to compliance with the permit conditions.

It's also important to note that the receiving water monitoring required under the permit addresses compliance verification of the APDES permit only and it is just one part of the overall site monitoring program which is also regulated under the WMP 2018DB0001, which was co-noticed with the APDES permit from December 15, 2017 through February 13, 2018. No changes were made to the permit or fact sheet as a result of this comment.

Comment: This permit will allow Donlin Gold to put water into the creek that is not as clean as the present water. In the winter if there should be a time when the plant can't use all the water needed for processing, and if there is an event where there isn't enough room for water storage, could the mine be allowed to put treated water into Crooked Creek at a time when the creek is almost dry? If the WTP is operating in the winter and the creek is low due to the season and due to dewatering from wells, then the treated water will be the only water in the creek. This will then be a mixing zone. Can fish live in only treated water?

DEC Response: The final permit requires compliance with water quality standards for all uses, including protection of aquatic life, at the outfall. Therefore, no mixing zone is authorized regardless of flow levels in Crooked Creek. No changes were made to the permit or fact sheet as a result of this comment.